UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/530,099	04/25/2000	OSAMU YOKOYAMA	105928	1092

25944 7590 02/23/2005

OLIFF & BERRIDGE, PLC
P.O. BOX 19928
ALEXANDRIA, VA 22320

EXAMINER	
JORGENSEN, LELAND R	
ART UNIT	**PAPER NUMBER**
2675	

DATE MAILED: 02/23/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/530,099	YOKOYAMA ET AL.	
	Examiner	Art Unit	
	Leland R. Jorgensen	2675	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *14 January 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *21 - 27 and 49* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *21 - 27 and 49* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *12/6/04*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. In a prior action, examiner stated that claims 21 – 27 and 49 are allowed. In support of the allowance, examiner stated,

> Claim 21 describes a relation between D and P being such that D is 10 times P. Although the separation 110 (analogous to D) in Lengyel, USPN 5,754,262, would be orders of magnitude more than the distance (between the elements as analogous to P) shown in Littman et al., USPN 5,688,551, none of the prior art teach the relation being such that D is exactly ten times P. Claims 22 – 27 and 49 are dependant on allowed claim 21.

Office Action, 10/25/04, p. 12. In response, applicant cancelled the remaining claims. Unfortunately, examiner must now withdraw the proposed allowance. Examiner had erroneously believed that claim 21 read, "a relationship between D and P being such that D is 10 times P." In fact, the claim read, "a relationship between D and P being such that D is 10 times P or more." Thus, examiners statement that "D is exactly ten time P" is not valid.

Moreover, additional prior art shows that the relationship between D, being the distance between each organic electroluminescent element and the display surface of a liquid crystal device element, and P, being the distance in the common plane between centers of adjacent organic electoluminescent elements, is about 10 times or more. For example, the following prior art patents teach the following distances between the centers of adjacent organic electoluminescent elements.

Shi et al., USPN 6,107,736	pitch less than 0.3 mm	col. 1, lines 25 – 28
Codama et al., USPN 6,037,712	pixel size 0.4 x 0.6 mm	col. 6, lines 2 – 5
Chen, USPN 6,008,578	pixel to pixel size 0.22 – 0.27 mm	col. 7, lines 1 – 8
Wei et al., USPN 5,747,363	pixel pitch less than 0.1 mm	col. 1, lines 29 – 32

Shi et al., USPN 5,736,754	subpixel pitch less than 0.2 mm	col. 1, lines 43 – 46
Wei et al., USPN 5,703,394	pixel pitch less than 0.1 mm	col. 1, lines 25 – 28
Shi et al., USPN 5,693,962	subpixel pitch less than 0.2 mm	col. 1, lines 52 – 55
Littman et al., USPN 5,688,551	100 pixels per millimeter	col. 3, lines 58 – 63
So et al., USPN 5,656,508	pixel pitch less than 0.1 mm	col. 1, lines 32 – 35
Stafford et al., USPN 5,650,640	pixel pitch less than 0.1 mm	col. 1, lines 59 – 62
So et el., USPN 5,587,589	pixel pitch less than 0.1 mm	col. 1, lines 31 – 34

Thus P, the prior art pitch, is about 0.1 mm. Although not found in as many prior art patents, the following two prior art patents describe D, the distance between each electroluminescent element and the display surface of a liquid crystal device element.

Nakamura et al., UPSN 6,225,741 B1	gap 1 mm or below	col. 7, lines 25 – 29
Lengyel, USPN 5,754,262	gap 1 mm to 5 mm	col. 5, lines 45 – 49.

Thus D, the prior art distance, is about 1mm. The ratio between P and D is that D is 10 times P. Although this action below rejects claim 21 under 35 U.S.C. 103(a) as obvious over combined prior art rather than over 102(b), it appears claim 21 is describing actual products that were being build, shipped, and sold several years before the filing date of application.

Examiner hereby withdraws the proposed allowance and apologizes for any inconvenience to applicant.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 21, 22, 25 - 27, and 49 are rejected under 35 U.S.C. 103(a) as being unpatentable over Littman et al., USPN 5,688,551, in view of Sano et al., USPN 5,779,937, and Lengyel, USPN 5,754,262.

Claim 21

Littman teaches a light source comprising a plurality of organic electroluminescent elements [B, G, R,] arrayed in a common plane parallel to a support surface of a substrate 110. Littman col. 3, lines 27 – 54; col. 4, lines 25 – 33; and figures 1 and 2. Although, Littman teaches that the plurality of organic electroluminescent elements emits light independently, it is also inherent that Littman's array can emit light simultaneously. Littman, col. 2, line 62 – col. 3, line 25. Littman teaches distance P [pitch] between each adjacent organic electroluminescent elements as small as a few microns. Littman, col. 1, lines 33 – 35; and col. 5, lines 32 – 36. Littman teaches that the organic EL element can permit pixel resolution as high as 100 pixels per millimeter. Littman, col. 3, lines 61 – 63. That is, Littman teaches a pitch of 0.1 millimeter.

Littman does not teach a display element nor a distance D between the display element and the organic electroluminescent element. Littman does not specifically teach that plurality of organic electroluminescent elements emits light simultaneously.

Sano teaches an organic electroluminescent device to backlight a display element. Sano, col. 1, lines 44 – 51; col. 2, lines 12 – 16; and col. 3, lines 19 – 22. When used as a backlight, the plurality of organic electroluminescent element emits light simultaneously. Sano, col. 2, lines 3, lines 19 – 22; and col. 4, lines 9 – 26.

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the use of an electroluminescent device as a backlight as taught by Sano with the light source of Littman. Sano invites such combination by teaching, "Further, it is also considered that the organic EL device is utilized as a backlight of a liquid crystal display device or the like because it can surface-emit light at a low voltage." Sano, col. 1, lines 48 – 51.

Neither Littman nor Forrest teach a relationship between D and P being such that D is 10 times P or more.

Lengyel teaches an daylight readable liquid crystal display having a display element 103 and a backlight assembly 103. Lengyel teaches a separation 110 between the display element and the backlight assembly of about 1 mm to about 5 mm. Lengyel, col. 5, lines 24 – 49; and figure 1. With Littman having a pitch of P = 0.1 mm and Lengyel having a separation of D = 1 mm, it is inherent that D, the separation 110 as taught by Lengyel would be 10 times the distance P, as taught by Littman, in a combined display device of Lengyel and Littman.

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the backlight assembly with a gap as taught by Lengyel with the light source of Littman and Sano to produce a daylight readable liquid crystal display having a backlight assembly of organic electroluminescent elements. Lengyel invites such combination by teaching,

> This invention relates to a display device for displaying images, and more particularly to a liquid crystal display device for generating and displaying images having sufficient contrast to be easily seen in bright daylight.

Lengyel, col. 1, lines 9 – 13. Lengyel adds,

> Therefore, there is currently a need for an LCD which is easily readable in daylight and which is usable over a wide temperature range in direct sunlight.

Lengyel, col. 1, lines 65 – 67. Lengyel then adds,

> A physical separation is preferably provided between the backlight and the display element. The physical separation preferably permits a heat conducting medium to remove heat from the back surface of the display element. This reduces the affects of thermal loading from the backlight assembly.

Lengyel, col. 3, lines 48 – 52. In the detail description, Lengyel elaborates on this by stating,

> The air flowing over the surface of the display element 102 reduces the affects of thermal loading on the liquid crystal display 103 from the backlight assembly 102. In the preferred embodiment, the separation 110 is about 1 mm to about 5 mm.

Lengyel, col. 5, lines 45 – 49. Lengyel invites consideration of different types of backlights by teaching,

> However, any conventional light source having sufficient brightness and similar emissive spectra may be used, such as a conventional fluorescent light fixture, a conventional incandescent light fixture, a halogen light fixture, or any other light source.

Lengyel, col. 4, lines 39 – 44.

Claim 22

Sano teaches that the plurality of organic electroluminescent elements emit light of one primary color. Sano, col. 2, lines 12 – 41.

Claim 25

It would have been obvious to one of ordinary skill in the art at the time of the invention to array the organic electroluminescent elements one-dimensionally on the substrate to provide a display section to form letters and numbers.

Claim 26

It would have been obvious to one of ordinary skill in the art at the time of the invention to array the organic electroluminescent elements two-dimensionally on the substrate to give a display area having both a width and a direction.

Claim 27

Sato et al. teaches a display device for illuminating a display element. Sato, col. 1, lines 44 - 51. See also Lengyel, col. 1, lines 9 – 12; and figure 1.

Claim 49

Sano teaches that all of the organic electroluminescent elements on the substrate can emit light simultaneously. Sano, col. 2, lines 12 – 41.

4. Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Littman et al., in view of Sano et al. and Lengyel as applied to claim 21 above, and further in view of Nakayama et al., USPN 5,847,506.

Claim 23

Neither Littman, Sano, nor Lengyel teach that the organic electroluminescent elements comprise optical micro-resonators.

Nakayama teaches organic electroluminescent elements that comprise optical micro-resonators. Nakayama, col. 1, lines 49 – 54; col. 3, lines 13 – 23; col. 3, line 61 – col. 4, line 10; and col. 6, lines 42 – 55.

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the optical micro-resonators of Nakayama with the light source of Littman, Sano, and Lengyel. Nakayama invites such combination by teaching,

> In view of solving the foregoing problems of the prior arts, it is an object of the present invention to provide an organic light emitting device having improved spectra width and light emitting characteristics.
>
> Another object of the present invention is to provide a substrate plate used for an organic light emitting device.

Nakayama, col. 1, lines 37 – 42. Nakayama teaches the following advantages.

> In the organic light emitting device of the present invention, the light micro-resonator can be accomplished therein in the way that the semi-transparent reflective film is place between the transparent electrode and the substrate plate and the optical distance between the reflective film and the rear electrode is made equal to or an integer multiplication of the emitted light wavelength. The micro-resonator can make narrow the half-width of the emitted light spectra. Also, the micro-resonator can increase the light emission efficiency, generate the coherent light, and improve the light emission characteristics.

Nakayama, col. 3, lines 13 – 23.

5. Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Littman et al., in view of Sano et al. and Lengyel as applied to claim 21 above, and further in view of Shioya et al., USPN 6,091,382.

Claim 24

Littman teaches that the organic electroluminescent elements are formed on the substrate at the intersections of an electrode formed in a striped pattern in a first direction and an electrode formed in a striped pattern in a second direction orthogonal to the first direction. Littman, col. 3, lines 26 – 39.

Littman nor Sano nor Lengyel specifically teach that one electrode is a cathode and the other is an anode.

Shioya teaches organic electroluminescent elements formed on the substrate at the intersections of an anode [striped anode electrodes 106] formed in a striped pattern in a first direction and a cathode formed [striped cathode electrodes 103] in a striped pattern in a second direction orthogonal to the first direction. Shioya, col. 10, lines 14 – 24; and figure 10.

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the organic electroluminescent elements and the pulse currents taught by Shioya with the light source for the display device as taught by Littman, Sano, and Lengyel. Shioya invites such combination by teaching,

> It is an object of the present invention to provide a display device whose load is small and which performs a proper high time-division display operation with little variation in luminance and little crosstalk among pixels, and to realize a high-resolution, large screen having a high opening ratio and a very low profile.

Shioya, col. 1, line 66 – col. 2, line 4. Shioya invites specifically the combination described by teaching,

> The driving method for the display device of this embodiment has been described above. By using this method, data erase can be arbitrarily performed as well as data write and setting of the data hold time. The driving method of this embodiment is characterized in that driving with a memory function can be performed without crosstalk, obtaining substantially the same effects as those obtained by a liquid crystal display device using TFTs. In addition, since static liquid crystal driving can be performed with a simple matrix electrode structure, high-quality display can be performed.

Shioya, col. 29, lines 40 – 49.

Conclusion

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leland R. Jorgensen whose telephone number is 703-305-2650 (or 571-272-7768 after 2 March 2005). The examiner can normally be reached on Monday through Friday, 10:00 am through 6:00 pm..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sumati Lefkowitz can be reached on 703-306-0403. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

lrj

DENNIS-DOON CHOW
PRIMARY EXAMINER